APPENDIX D

AVALANCHE MODELLING PARAMETERS AND ASSUMPTIONS

The following Table D.1 presents the main input parameters and assumptions for each of the five avalanche models which were utilized in the avalanche hazard assessment. The avalanche paths were grouped into three main modelling scenarios based on the relative scale of the avalanche paths (large, medium and small scale).

Figures D.1 and D.2 present the polygons used for RAMMS modelling including the release areas and the forest polygons. The release areas are colour-coded based on the path scale and release depth.

Figures D.3 and D.4 present the RAMMS maximum velocity results, with inclusion of the forest polygons.

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Table D.1: Statistic and Dynamic Avalanche Modelling Inputs

	α-β	Runout Ratio	PCM	PLK	RAMMS
Large Scale Paths J003, J004, J010, J011, J015, West A-J, T009, T011, T014	Range: Coastal Alaska (McClung and Mears 1991) $\alpha = 0.74\beta + 3.67°$ $P = 0.5$ and 0.85 Se = 0	Range: Coastal Alaska (McClung and Mears 1991) $\Delta x/X_\beta = u - b\cdot\ln(-\ln(P))$ $P = 0.5$ and 0.85 $u = 0.185$ $b = 0.108$	$\mu = 0.2\text{-}0.4$ $\mu_{powder} = 0.155$ M/D = 690-860	$\mu = 0.25$ $\log(M/D) = 2.75\text{-}2.9$ $R = 0.3$	Release depth = 2.0 m Friction Volume: Large Friction Return Period: 300-year Friction Elevations: 700/200 m Release Areas1: 19,257 m^2 to 149,662 m²
Medium Scale Paths J001, J002A, J005A, J005B, J012, J014, J016 T004, T005, T006, T007, T008			$\mu = 0.2\text{-}0.4$ $\mu_{powder} = 0.155$ M/D = 310-690	$\mu = 0.28\text{-}0.32$ $\log(M/D) = 2.35\text{-}2.85$ $R = 0.25\text{-}0.3$	Release depth = 1.5 m Friction Volume: Medium Friction Return Period: 300-year Friction Elevations: 500/200 m Release Areas1: 3,634 m^2 to 39,422 m²
Small Scale Paths J000, J002B, J013, J017, J018, J019, J020, J021, J022, J023, J024, J025, J026, G000, G001, G001.5, G002, G003, G004, G005, G006, G007, G008, G009, T000, T001, T002, T003, T010, T012, T013			$\mu = 0.2\text{-}0.4$ $\mu_{powder} = 0.155$ M/D = 200-350	$\mu = 0.28\text{-}0.32$ $\log(M/D) = 2.3\text{-}2.55$ $R = 0.2\text{-}0.3$	Release depth = 1.0 m Friction Volume: Small Friction Return Period: 300-year Friction Elevations: 300/150 m Release Areas1: 391 m^2 to 11,623 m²

Definitions and Assumptions

- μ: basal sliding friction parameter, increases with segment distance from start zone to runout zone
- M/D: mass to drag ratio (turbulent friction parameter)
- R: Random term in the PLK model
- P: non-exceedance probability
- Δx : Runout distance; X_β : horizontal length from start zone to the β point; u: Location parameter; b: Scale parameter
- α: Alpha angle; β: Beta angle; Se: Standard error
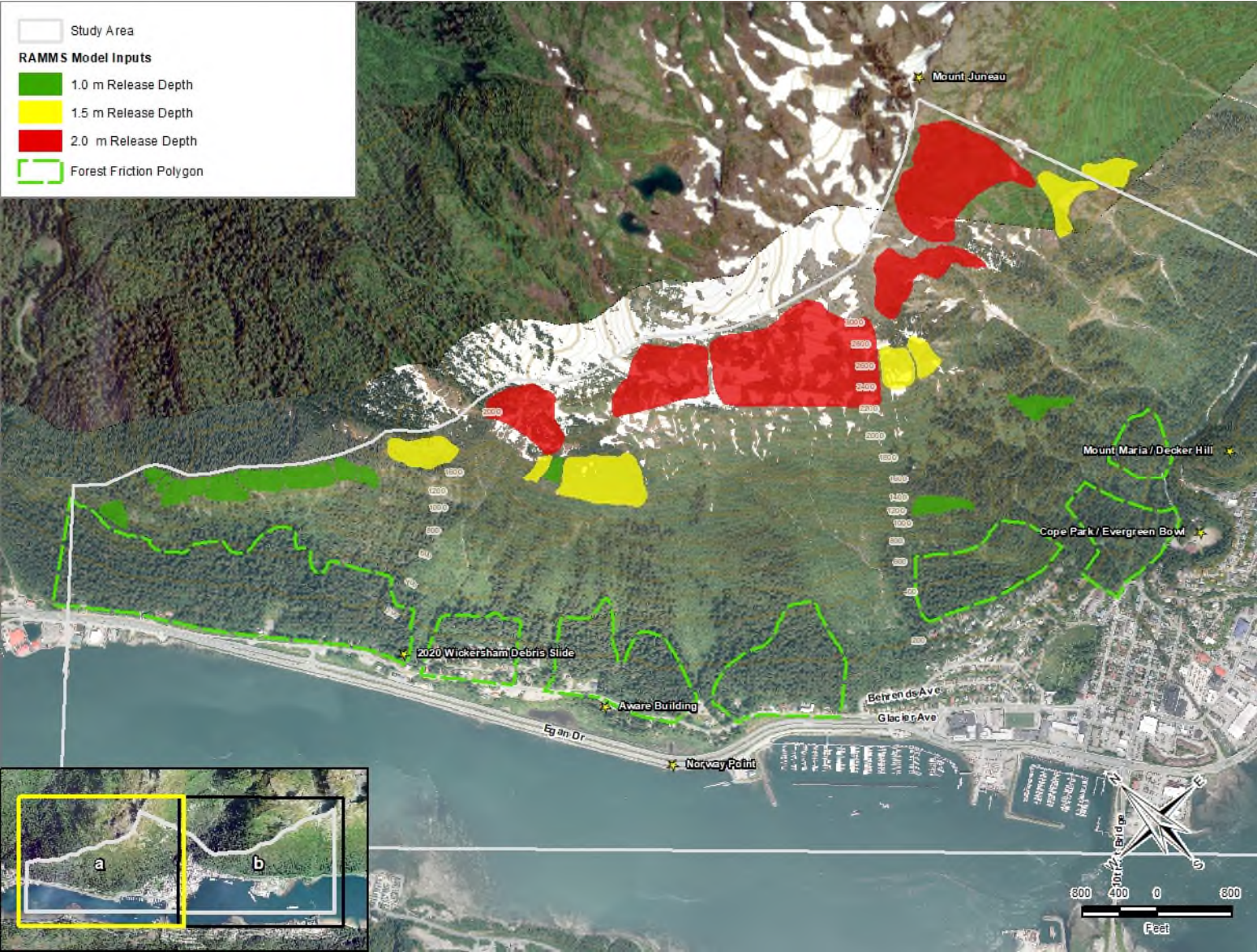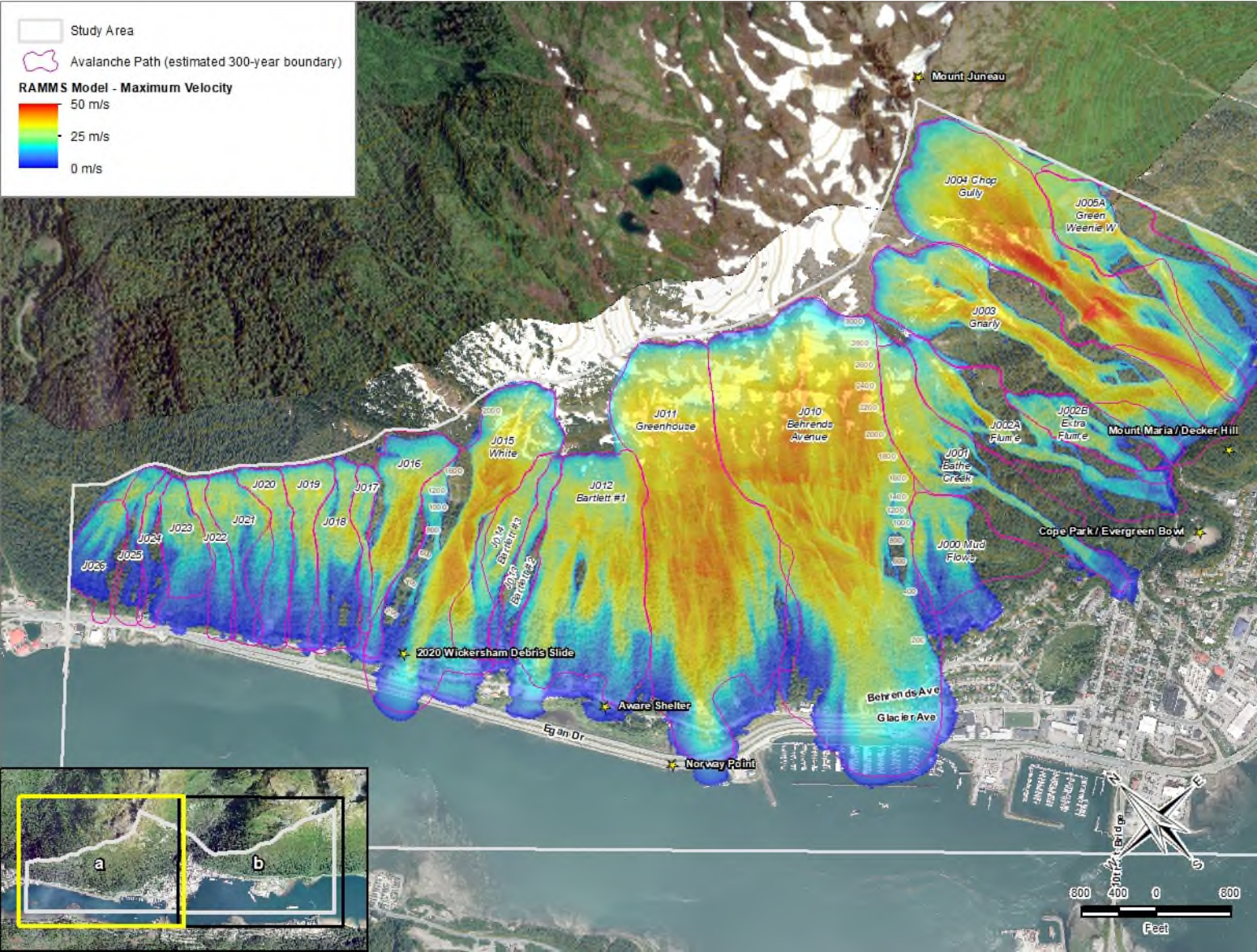- [1] Release Area is measured as the planimetric area

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Figure D.1: RAMMS release areas and forest polygons.

D.3

Figure D.2: RAMMS release areas and forest polygons.
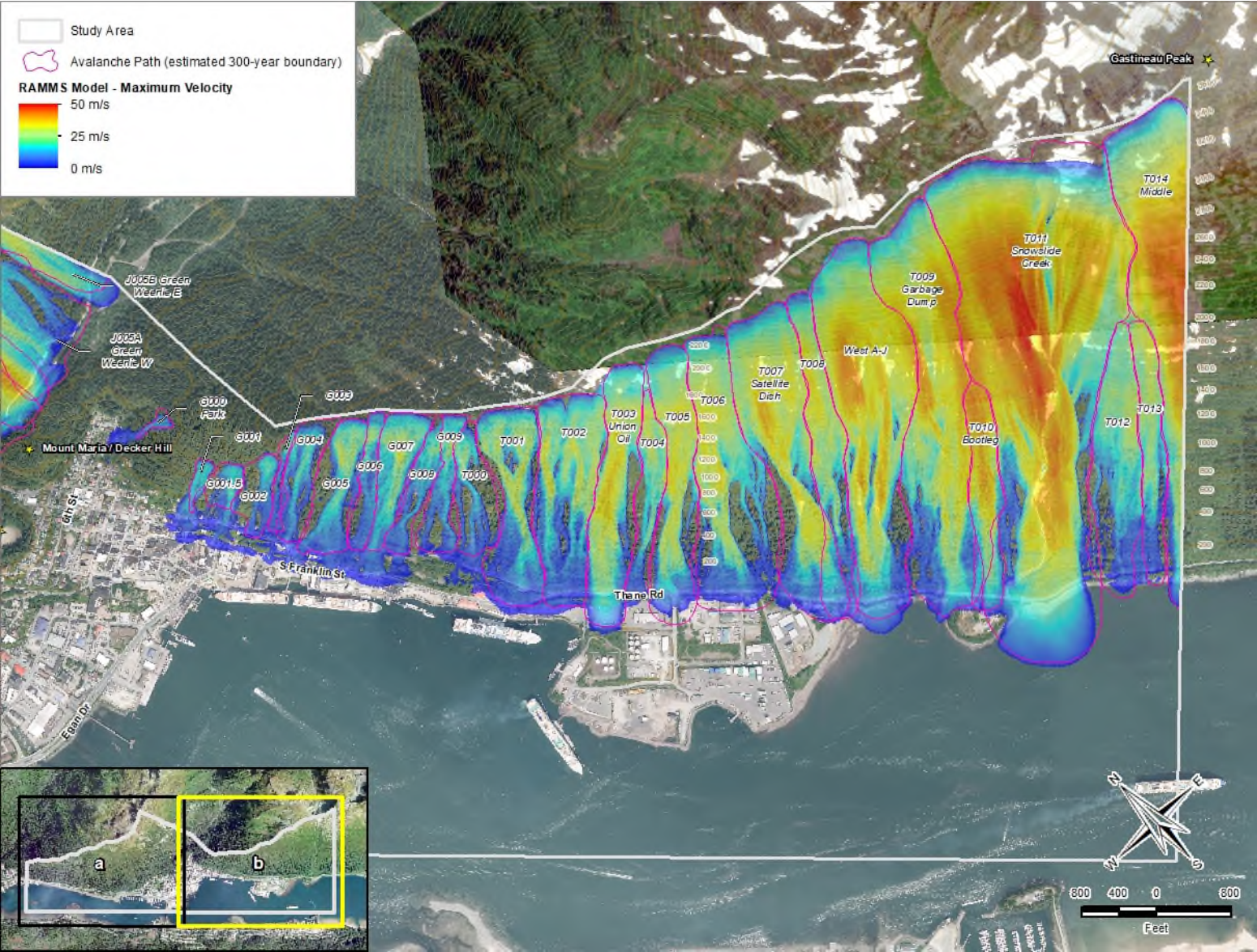
D.4

Figure D.3: RAMMS maximum velocity results.

D.5

Figure D.4: RAMMS maximum velocity results.

D.6